Amendments to the Claims

The following claims replace all prior claims in this application.

1. (Previously presented) A method for purifying a polypeptide from a composition comprising the polypeptide and contaminants, which method comprises the sequential steps of:

(a) loading the composition onto an ion exchange resin with an equilibration buffer having a first salt concentration;

(b) washing the ion exchange resin with a wash buffer until a predetermined protein concentration is measured in the flowthrough, wherein the salt concentration of the wash buffer increases from an initial, second salt concentration that is greater than the salt concentration of the equilibration buffer, to a final, third salt concentration;

(c) passing a fixed volume of wash buffer at the final, third salt concentration over the cation exchange resin; and

(d) eluting the polypeptide from the ion exchange resin with elution buffer that has a salt concentration that is greater than the final salt concentration of the wash buffer.

2. (Previously presented) The method of claim 1 wherein the ion exchange resin is an anion exchange resin.

3. (Previously presented) The method of claim 1 wherein the ion exchange resin is a cation exchange resin.

4. (Previously presented) The method of claim 3 wherein the cation exchange resin comprises sulphopropyl immobilized on agarose.

5. (Previously presented) The method of claim 1 wherein the elution buffer has a higher conductivity than the equilibration buffer.

6. (Previously presented) The method of claim 1 wherein the elution buffer comprises about 145 mM Na/HOAc and the equilibration buffer comprises about 70 mM Na/HOAc.

7. (Previously presented) The method of claim 1 wherein the elution buffer comprises about 100 mM NaCl and the equilibration buffer comprises about 45 mM NaCl.

8. (Previously presented) The method of claim 1 wherein the wash buffer comprises a mixture of equilibration buffer and elution buffer.

9. (Previously presented) The method of claim 8 wherein the increase in the

salt concentration of the wash buffer during step (b) is achieved by increasing the proportion of elution buffer in the wash buffer.

10. (Previously presented) The method of claim 9 wherein the proportion of elution buffer in the wash buffer increases at a constant rate.

11. (Previously presented) The method of claim 10 wherein the increase in the proportion of elution buffer causes the salt concentration of the wash buffer to increase at a constant rate of from about 1 mM to about 3 mM per column volume of wash buffer.

12. (Previously presented) The method of claim 9 wherein the percentage of elution buffer in the wash buffer increases at two or more different rates during the course of washing in step (b).

13. (Previously presented) The method of claim 12 wherein the percentage of elution buffer in the wash buffer increases at a first rate for a first segment of the washing, at a second rate for a second segment of the washing and at a third rate for a third segment of the washing.

14. (Previously presented) The method of claim 1 wherein the polypeptide is an antibody.

15. (Previously presented) The method of claim 14 wherein the antibody binds HER2.

16. (Previously presented) The method of claim 14 wherein the contaminant is a deamidated variant of the antibody.

17. (Previously presented) The method of claim 14 wherein the amount of antibody in the composition loaded onto the ion exchange resin is from about 15 mg to about 45 mg per mL of cation exchange resin.

18. (Previously presented) The method of claim 1 wherein the predetermined protein concentration in step (b) corresponds to an OD of 0.6 measured at 280 nm.

19. (Previously presented) The method of claim 1 wherein from about 0.4 to about 1 column volumes of wash buffer are passed over the ion exchange resin in step (c).

20. (Previously presented) The method of claim 1 wherein the pH of the equilibration buffer, wash buffer and elution buffer is approximately the same.

21. (Previously presented) The method of claim 23 wherein the pH of the equilibration buffer, wash buffer and elution buffer is approximately 5.5.

22. (Previously presented) The method of claim 1 further comprising subjecting the composition comprising the polypeptide to one or more further purification steps either before, during, or after steps (a) through (d) so as to obtain a homogeneous preparation of the polypeptide.

23. (Previously presented) The method of claim 22 further comprising preparing a pharmaceutical composition by combining the homogeneous preparation of the polypeptide with a pharmaceutically acceptable carrier.

24. (Previously presented) The method of claim 22 further comprising conjugating the purified polypeptide with a heterologous molecule.

25. (Previously presented) The method of claim 24 wherein the heterologous molecule is polyethylene glycol, a label or a cytotoxic agent.

26. (Canceled)

27. (Previously presented) A method for purifying an antibody from a composition comprising the polypeptide and a contaminant, which method comprises the following steps performed sequentially:

(a) binding the antibody to a cation exchange material with an equilibration buffer at a first conductivity;

(b) washing the cation exchange material with a wash buffer, wherein the conductivity of the wash buffer increases from a second conductivity that is higher than the first conductivity to a third conductivity during the washing;

(c) passing a fixed volume of wash buffer at the third conductivity over the cation exchange material; and

(d) eluting the antibody from the cation exchange material with an elution buffer at a fourth conductivity that is higher than the third conductivity.

28. (Previously presented) The method of claim 27 wherein the cation exchange resin comprises sulphopropyl immobilized on agarose.

29. (Previously presented) The method of claim 27 wherein the conductivity of the wash buffer increases at a constant rate from the second conductivity to the third conductivity.

30. (Previously presented) The method of claim 27 wherein the conductivity of the wash buffer increases at two or more different rates from the second conductivity to the third conductivity.

31. (Previously presented) The method of claim 30 wherein the conductivity of the wash buffer increases at a first rate for a first segment of the washing, at a second rate for a second segment of the washing and at a third rate for a third segment of the washing.

32. (Previously presented) The method of claim 31 wherein the wash buffer comprises a mixture of equilibration buffer and elution buffer.

33. (Previously presented) The method of claim 32 wherein the conductivity of the wash buffer is increased by increasing the proportion of elution buffer in the wash buffer.

34. (Previously presented) The method of claim 33 wherein the proportion of elution buffer in the wash buffer increases at a constant rate of about 6% during the first segment, at a constant rate of about 3.5% during the second segment and at a constant rate of about 2% during the third segment.

35. (Previously presented) The method of claim 33 wherein the proportion of elution buffer in the wash buffer increases from about 26% to about 54% during the first segment, from about 54% to about 61% during the second segment and from about 61% to about 74% during the second segment.

36. (Previously presented) The method of claim 31 wherein the cation exchange material is washed with about 5 column volumes of wash buffer in the first segment, about 2 column volumes of wash buffer in the second segment and about 6 column volumes of wash buffer in the third segment.

37. (Previously presented) The method of claim 27 wherein the conductivity of the wash buffer is increased by increasing the percentage of elution buffer in the wash buffer.

38. (Previously presented) The method of claim 27 wherein the conductivity of the wash buffer is increased by increasing the salt concentration therein.

39. (Previously presented) The method of claim 27 wherein the fixed volume of wash buffer passed over the cation exchange material in step (c) is between about 0.4 column volumes and about 1.0 column volumes.

40. (Previously presented) The method of claim 27 further comprising washing the ion exchange material with a regeneration buffer after step (d).

41. (Previously presented) A method for purifying an antibody from a composition comprising the antibody and a contaminant, which method comprises the following steps performed sequentially:

(a) loading the composition onto a cation exchange material;

(b) washing the cation exchange material with a wash buffer with a conductivity that increases at a first rate from a first conductivity to a second conductivity, at a second rate from the second conductivity to a third conductivity and at a third rate from the third conductivity to a fourth conductivity; and

(c) eluting the antibody from the ion exchange material,

wherein the amount of antibody in the composition loaded onto the cation exchange material is from about 15 mg to about 45 mg of the antibody per ml of cation exchange material.

42. (Currently amended) A method for purifying a polypeptide from a composition comprising the polypeptide and a contaminant, which method comprises the following steps performed sequentially:

(a) loading the composition onto an ion exchange material;

(b) washing the ~~cation~~ ion exchange material with wash buffer using a multi-slope salt or conductivity gradient until a predetermined protein concentration is measured in the flowthrough; and

(c) eluting the polypeptide from the ion exchange material.

43. (Previously presented) The method of claim 42 wherein the multi-slope gradient comprises two or more segments.

44. (Previously presented) The method of claim 43 wherein each segment of the multi-slope gradient has a shallower slope.

45. (Previously presented) The method of claim 42, additionally comprising the step between steps (b) and (c) of washing the column with from 0.4 to 1 column volumes of wash buffer.

46. (Previously presented) The method of claim 45 wherein the wash buffer has the composition of the wash buffer at the end of step (b).